SECTION 6

COST ANALYSES

Cost estimates to achieve both risk-based cleanup levels and cleanup levels based on protection of potential future drinking water sources are provided in **Table 6-1** for each soil and groundwater unit. Although the target risk-based MCS has been set at the 10^{-6} theoretical ILCR level, estimated costs for cleanup to the 10^{-4} and 10^{-5} levels are also provided for comparison. Where cleanup protective of potential drinking water sources is not required, cost is shown as $0; however, risk-based cleanup and the associated costs shown will still be required for those areas. In addition, the incremental costs associated with controlling migration of contaminated groundwater are also provided, where applicable. These regulatory compliance costs are associated with the SWRCB non-degradation policy under the Porter-Cologne Water Quality Control Act. However, although these costs are indicated under regulatory compliance, if current migration control measures were terminated, there could also be a potential risk to the environment. The total costs for conducting recommended corrective measures are based on risk-based cleanup using a 10^{-6} theoretical ILCR level, cleanup to MCLs in areas where protection of potential future drinking water sources is applicable (i.e., well yields > 200 gpd), and the costs of continued migration control.

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Building 51/64 Groundwater Solvent Plume						
Corrective Measure	No Action	Soil Flushing and Extraction Trench and MNA.	Soil Flushing and Extraction Trench and MNA	Soil Flushing and Extraction Trench and MNA.	Capture and Treat Groundwater from Building 51 Subdrain	
Assumed End Date	N/A	Soil Flushing = 2011 MNA = indeterminate	Soil Flushing = 2011 MNA = indeterminate	Soil Flushing = 2011 MNA = indeterminate	indeterminate	
Capital Cost	$0	$29,000	$29,000	$29,000	$0	$29,000
Annual O&M Cost	$0	$106,000	$106,000	$106,000	$20,000	$126,000
Total Cost (NPV) through 2011	$0	$682,000	$682,000	$682,000	$124,000	$806,000
Annual Cost After 2011	$0	$26,000	$26,000	$26,000	$20,000	$46,000
Building 51L Groundwater Solvent Plume and Building 51L Source Area						
Corrective Measure	No Action	Soil Excavation and MNA.	Soil Excavation and MNA.	No Action	Reroute/line storm drain	
Assumed End Date	N/A	Excavation = 2006 MNA = indeterminate	Excavation = 2006 MNA = indeterminate	N/A	2006	
Capital Cost	$0	$569,000	$569,000	$0	$147,000	$716,000
Annual O&M Cost	$0	$26,000	$26,000	$0	$0	$26,000
Total Cost (NPV) through 2011	$0	$730,000	$730,000	$0	$138,000	$868,000
Annual Cost After 2011	$0	$26,000	$26,000	$0	$0	$26,000

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units (cont'd.)

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Building 71 Groundwater Solvent Plume						
Corrective Measure	No Action	Chemical Oxidation (source area) and Soil Flushing	Chemical Oxidation (source area) and Soil Flushing	Chemical Oxidation (source area) and Soil Flushing	Capture and Treat Hydrauger Effluent	
Assumed End Date	N/A	Soil Flushing = 2011 Chemical Oxidation = 2006	Soil Flushing = 2011 Chemical Oxidation = 2006	Soil Flushing = 2011 Chemical Oxidation = 2006	indeterminate	
Capital Cost	$0	$380,000	$380,000	$380,000	$0	$380,000
Annual O&M Cost	$0	$80,000	$80,000	$80,000	$20,000	$100,000
Total Cost (NPV) through 2011	$0	$959,000	$959,000	$959,000	$124,000	$1,083,000
Annual Cost After 2011	$0	$0	$0	$0	$20,000	$20,000
Old Town Groundwater Solvent Plume Building 7 Lobe and Former Building 7 Sump						
Corrective Measure	Source Excavation, Soil Flushing and Groundwater Extraction,	Source Excavation, Soil Flushing and Groundwater Extraction	Source Excavation, Soil Flushing and Groundwater Extraction	Source Excavation, Soil Flushing and Groundwater Extraction, MNA in Downgradient Area	Capture and Treat Groundwater from Trenches	
Assumed End Date	2011	indeterminate	indeterminate	indeterminate	indeterminate	
Capital Cost	$591,000	$591,000	$591,000	$591,000	$0	$591,000
Annual O&M Cost	$62,000	$62,000	$62,000	$62,000	$20,000	$82,000
Total Cost (NPV) through 2011	$970,000	$970,000	$970,000	$970,000	$124,000	$1,094,000
Annual Cost After 2011	$0	$62,000	$62,000	$62,000	$20,000	$82,000

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units (cont'd.)

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Old Town Groundwater Solvent Plume Building 52 Lobe						
Corrective Measure	No Action	No Action	No Action	Soil Flushing with 4 New Injection Wells	Capture and Treat Groundwater from B46 Subdrain	
Assumed End Date	N/A	N/A	N/A	indeterminate	indeterminate	
Capital Cost	$0	$0	$0	$66,000	$0	$66,000
Annual O&M Cost	$0	$0	$0	$49,000	$20,000	$69,000
Total Cost (NPV) through 2011	$0	$0	$0	$364,000	$124,000	$488,000
Annual Cost After 2011	$0	$0	$0	$49,000	$20,000	$69,000
Old Town Groundwater Solvent Plume Building 25A Lobe						
Corrective Measure	No Action	No Action	No Action	Soil Flushing and Groundwater. Extraction, MNA in Downgradient Area	No Action	
Assumed End Date	N/A	N/A	N/A	indeterminate	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$0	$51,000	$0	$51,000
Total Cost (NPV) through 2011	$0	$0	$0	$318,000	$0	$318,000
Annual Cost After 2011	$0	$0	$0	$51,000	$0	$51,000

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units (cont'd.)

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Solvents in Groundwater South of Building 76						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$0	$0	$0	$0
Total Cost (NPV)	$0	$0	$0	$0	$0	$0
Building 75/75A Area of Groundwater Contamination						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$0	$0	$0	$0
Total Cost (NPV)	$0	$0	$0	$0	$0	$0
Building 69A Area of Groundwater Contamination						
Corrective Measure	No Action	No Action	MNA	No Action	No Action	
Assumed End Date	N/A	N/A	indeterminate	N/A	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$26,000	$0	$0	$26,000
Total Cost (NPV) through 2011	$0	$0	$160,000	$0	$0	$160,000
Annual Cost After 2011	$0	$0	$26,000	$0	$0	$26,000

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units (cont'd.)

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Building 77 Area of Groundwater Contamination						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$0	$0	$0	$0
Total Cost (NPV)	$0	$0	$0	$0	$0	
Benzene in Wells East of Building 75A						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	$0	$0	$0
Annual O&M Cost	$0	$0	$0	$0	$0	$0
Total Cost (NPV)	$0	$0	$0	$0	$0	
Building 88 Hydraulic Gate Unit						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	N/A	$0	$0
Annual O&M Cost	$0	$0	$0	N/A	$0	$0
Total Cost (NPV) through Assumed End Date	$0	$0	$0	$0	$0	$0

Table 6-1. Cost Estimates for Specific Corrective Measures Alternatives Proposed for Soil and Groundwater Units (cont'd.)

Soil and Groundwater Units	Risk-Based Cleanup Costs			Potential Future Drinking Water Source Cleanup Costs[a]	Regulatory Compliance Costs[b]	Total Costs[d] of Recommended Corrective Measures
	Risk = 10^{-4}	Risk = 10^{-5}	Risk = 10^{-6}	MCS = MCLs[c]	Incremental Cost of Migration Control	
Building 75 Former Hazardous Waste Handling and Storage Facility						
Corrective Measure	No Action	No Action	No Action	No Action	No Action	
Assumed End Date	N/A	N/A	N/A	N/A	N/A	
Capital Cost	$0	$0	$0	N/A	$0	$0
Annual O&M Cost	$0	$0	$0	N/A	$0	$0
Total Cost (NPV) through Assumed End Date	$0	$0	$0	$0	$0	$0
Grand Total (NPV) through 2011	$970,000	$3,341,000	$3,501,000	$3,293,000	$634,000	$4,817,000[e]
Grand Total (Annual Cost After 2011)	$0	$114,000	$140,000	$188,000	$80,000	$320,000[e]

(a) Where regulatory-based cleanup is not required, the cost for regulatory-based cleanup is shown as $0.00; however, risk-based cleanup and the associated costs shown will still be required for those areas.

(b) Control the migration of contaminated groundwater so that COCs do not migrate to groundwater in adjacent uncontaminated areas or to surface water.

(c) Regulatory-based MCSs apply in plume areas where well yield ≥ 200 gallons per days

(d) Total costs only include estimated direct costs associated with task scopes described in the CMS report. General compliance costs and program administration/management costs are not included.

(e) The Total Costs of Recommended Corrective Measures (column 7) is the sum of either the Risk Based Cleanup Cost (column 4) or the Potential Drinking Water Source Cleanup Cost (column 5), whichever is applicable at each unit, and the Regulatory Compliance Cost (column 6). Therefore the Total Costs of Recommended Corrective Measures does not sum across each row.

SECTION 7

NATIONAL ENVIRONMENTAL POLICY ACT REVIEW

7.1 INTRODUCTION

It is DOE's policy with respect to compliance with National Environmental Policy Act (NEPA) requirements to incorporate NEPA values into documents prepared for Resource Conservation and Recovery Act (RCRA) corrective actions whenever allowed by the RCRA regulatory oversight agency. Hence, with the approval of the DTSC, this chapter provides the required NEPA documentation, which includes a discussion of the proposed RCRA corrective actions at Berkeley Lab and their consequences. Further, when state agencies must comply with a state environmental policy act (in this case, the California Environmental Quality Act or CEQA), it is DOE's policy to reduce duplication between the NEPA and comparable state requirements (pursuant to the Council on Environmental Quality regulation at 40 CFR Section 1506.2(c)). Therefore, to the extent possible, this NEPA values review incorporates by reference the relevant information contained in the California Environmental Protection Agency Department of Toxic Substances Control's (DTSC's) Initial Study and Tiered Negative Declaration (IS/ND) for the Corrective Measures Project at Lawrence Berkeley National Laboratory (DTSC, 2005).

The IS/ND was prepared by the DTSC in accordance with requirements of CEQA (Section 21000 et seq., California Public Resources Code) and Guidelines for Implementation (Section 15000 et seq., Title 14, California Code of Regulations). The IS/ND describes the environment affected by the proposed actions and analyzes the potential impacts with regard to the following environmental topic areas: (1) aesthetics; (2) agricultural resources; (3) air quality; (4) biological resources; (5) cultural resources; (6) geology and soils; (7) hazards and hazardous materials; (8) hydrology and water quality; (9) land use and planning; (10) mineral resources; (11) noise; (12) population and housing; (13) public services; (14) recreation; (15) transportation and traffic; (16) utilities and service systems; and (17) cumulative impacts. The document was tiered from Berkeley Lab's 1987 Long Range Development